

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF ILLINOIS

BRICKSTOP CORPORATION,	)	Case Number: 1:08-cv-02690
	)	
Plaintiff,	)	Assigned Judge: Gettleman
	)	
v.	)	Designated
	)	Magistrate Judge: Cole
VALLEY VIEW INDUSTRIES, H.C., Inc.,	)	
	)	
Defendant.	)	

**PLAINTIFF BRICKSTOP CORPORATION'S  
EXPERT REPORT OF JORDAN I. ROTHEISER**

**I. INTRODUCTION**

1. My name is Jordan I. Rotheiser. I live in Highland Park, Illinois. I am an expert and consultant in the fields of plastic product design, injection molding and tooling design. I am the founder of my own consulting firm, Rotheiser Design, Inc. and have 48 years experience in the plastics industry. I have a BA in Industrial Design and a BSE in Industrial Engineering from the University of Illinois. Personally, I have eight patents. I have been retained as an expert by plaintiff BrickStop Corporation, Inc. to opine on whether various features of the BrickStop B.E.A.S.T. product are only functional, meaning they have no decorative aspect, and whether equally acceptable or even superior alternative configurations exist to achieve the desired function of securing pavers against lateral movement.

2. Rotheiser Design Inc. provides industrial design and engineering services for plastic products. The profession of Industrial Design is a cross between art and engineering and is the service of creating and developing concepts and specifications that optimize the function, value and appearance of products and systems for the mutual benefit of both user and manufacturer (according to the Industrial Design Society of America). Rotheiser Design Inc. executes projects from concept through production or any portion thereof. Included are the completion of troubled projects started by others and consultation on product failures in the field. Other work includes the creation of books, seminars and periodicals on plastics design and expert witness consultation and testimony in lawsuits.

3. During the past four years, I have given trial or deposition testimony as an expert witness in the following cases (clients are underlined):

3M Innovative Properties v. Illinois Tool Works, Inc.

Gary A. Downs v. Isle of Capri Casinos, Inc.v

Patent Reexamination for Radio Shack Corp.

RTC Industries, Inc. v. William Merit & Associates

Robert Gorman v. Suncast Corporation

Seiko Epson v. Dynamic Print

Parfums de Coeur, Ltd. v. LePapillon, Ltd.

Mark Freeman and Timothy Stringer v. Gerber Products Company

ADC Telecommunications, Inc. v. Panduit Corp.

4. I have been a member of the Society of Plastics Engineers since 1960 and have held numerous offices within that organization. Currently, I am a councilor on its International Council, a seminar instructor and sit on the board of directors of its Product Design and Decorating and Assembly Divisions. I am a Fellow of the Society and have received several honors from the SPE including Honored Service Member. I have been honored with election to the Plastics Pioneers Association by the Society of the Plastics Industry. In addition, I am a professional member of the Industrial Design Society of America and have served on the board of directors of its Chicago Chapter.

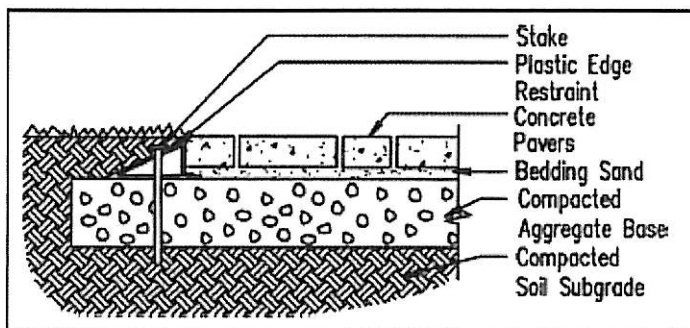
5. I have authored several publications during the last ten years including a best selling book on joining of plastics. Those publications are listed in my C.V., included in this report as Exhibit A. My expert qualifications are also set forth in my C.V.

6. I am being compensated at my customary rate of \$250 per hour for my work in this case. I have no financial interest in the outcome of this case, nor do I have any financial interest in, or fiduciary relationship to, BrickStop Corporation, Inc. or Valley View Industries, H.C., Inc.

7. In the preparation of this report, I have read BrickStop's Complaint and Exhibits, Valley View's Answer, BrickStop's Memo in Support of its Motion for Preliminary Injunction including the Declaration of David Frieberg and Exhibits, the Stipulated Protection Order, the Opposition Brief, the Declaration of Jason Brown, the Declaration of Al Train, the Declaration of Gary Wein and Exhibits, the Declaration of Joel Hutchinson, the Expert Report of Robert W. Dealey and the website of the Interlocking Concrete Paver Institute (ICPI). I have further

reviewed Valley View's Drawings Production Numbers VVW001856, VVW001857, VVW001858, VVW001859, VVW001860 and VVW001861 and BrickStop's Drawings Production Numbers BOO11932, BOO11941, BOO11951, BOO11961 and BOO11971. In addition, I have examined BrickStop's B.E.A.S.T. and Son of B.E.A.S.T. as well as Valley View Industries' Diamond Edge #DPE-8. I have also had conversations with David Frieberg, Rubin Kurtz and Andrew Savoie. David Frieberg and Rubin Kurtz are representatives of the Plaintiff in the case and have many years of experience in the paver installation industry. Andrew Savoie is a practitioner in the paver installation industry with 23 years experience who was a member of the Board of Directors of the Interlocking Concrete Pavers Institute (ICPI) from 2000 to 2006 and a member of its Construction Committee from 1996 to 2006, during which period he helped create ICPI's Technical Specifications for the installation of pavers.

8. In my conversations with David Frieberg, Rubin Kurtz and Andrew Savoie, I was informed as to the function and usage of paver edging. Paver edging is placed along the perimeter of the paver constructed driveway, walk-way or patio in order to provide an edge restraint, which is essential for eliminating horizontal creeping of the pavers and loss of bedding sand.



Above is a diagram from the ICPI website illustrating the correct installation of the paver system with plastic paver edging. The bedding sand is placed over the aggregate base and under the pavers themselves. The edge restraint prevents the pavers and bedding sand from creeping. The



aggregate extends under the edge restraint as well. I was further informed that no torsional forces are placed on paver edging in normal usage. In my conversation with Andrew Savoie, he informed me that the minimum recommended paving curve is a 3 foot radius and the smallest radius he has ever seen was 2 feet. Andrew Savoie further stated that all of the paver edging marketed in North America is acceptable from a strength and function standpoint. In addition, in his 23 years of experience in the field, he has never seen a failure due to paver edging. When failures do occur, they are due to improper, or often complete lack of, preparation of the base, bedding sand or the use of lawn edging, which is too weak, instead of paver edging. He also informed me that 70% of jobs are done in the normal, not reverse, placement of the paver edging because it is cheaper to install that way. David Frieberg and Rubin Kurtz informed me that their intention was, "to create a design that looked different from the other products in the marketplace." In doing so, they created the B.E.A.S.T. (Exhibit B.)

9. Rosato's Plastics Encyclopedia and Dictionary (Exhibit C.) states, "The injection molding (IM) process is greatly preferred by designers because the manufacture of parts of complex shapes and three-dimensions can be more accurately controlled and predicted with IM than with other processes." In particular, injection molding provides the freedom to create functional, decorative and distinctive shapes that could not be achieved with extrusion. Extruded shapes are limited to contours in two dimensions as the third dimension must be continuous as with, for example, pipe or soda straws.

**Comparison Between Valley View Industries' Diamond Edge #DPE-8 and BrickStop Corporation's B.E.A.S.T. and Son of B.E.A.S.T.**

10. In Paragraph 28 of his expert report, Robert Dealey has stated that, "It is also well known in plastic part design that the least amount of material used to manufacture a product that performs in that application is the preferred design approach." I concur in that statement as it is a variant of the basic principle taught to all engineering students that the objective of engineering

design is to achieve the desired function using the least amount of natural resources. Therefore, any additional material used would be for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

11. The designs offered by BrickStop Corporation as the B.E.A.S.T. and Son of B.E.A.S.T. use considerably more material than is required for the performance of its function (Exhibit B). This is done for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

12. At an earlier point in the development of the B.E.A.S.T., BrickStop did create the optimum functional design for the product. That design is depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D.) Production Number B001196, a design intended to utilize the design freedom advantages of the process of injection molding. By utilizing straight ribs between the point of where the wall is loaded and the location of the pin, support is provided with the least amount of material usage (Exhibit E.). This reduced material usage would require less time for the molding cycle as well, thereby reducing the machine and labor cost for each part. A single cross rib, which can be cut for bends, between the triangles provides support for the lengthwise direction in the most economical manner. A lattice type layout could be achieved by simply alternating the height of the triangles (Exhibit F.). Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder. A prototype was made, however BrickStop did not use this design because it was deemed lacking in appearance and distinctiveness according to my conversation with Mr. Freiberg and Mr. Kurtz.

13. The Opposition Brief refers to six attributes referred to in BrickStop's advertising for the B.E.A.S.T.

1-2. Has "One piece that does both [1] straight lines and [2] curves";

3. "Uses a lattice nailing pattern for strength and stability";

4. Has "Structural Rib Re-enforcement SRR™ for perfect straight lines.";
5. Has a "Stable Sure-gripping Footprint SSF™ for stability; and
6. Has a " reverse application"

All of the above attributes can be achieved with the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D.) Production Number B001196. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

14. The first and second attributes refer to the suitability of the design for straight line and curved applications. Exhibit E is an enlargement of the basic structure of the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D.), Production Number B001196. The vertical wall provides the physical strength for the structure. It should be noted that the vertical wall ribs and connection details depicted in Exhibit D were judged unnecessary based on the prototype that was constructed at the time. The triangular geometry provides rigidity across the base of the triangle. The straight ribs that form the triangle and the rib between the hole and the wall provide the strength to resist the pressure exerted against the retaining wall by the pavers. The cross rib between the triangles maintains rigidity for the portion of wall between the triangles. Removal of that rib lessens the rigidity which permits curvature of the wall for round paver patterns. A small dimple in the wall between the triangles provides a start for the curve to facilitate curvature of the wall. This design permits a smaller radius than the B.E.A.S.T., however I understand that a two foot radius is the smallest any of the principals or Mr. Savoie have ever seen in application. This design could be altered to provide for a chevron-shaped stake such as depicted in Exhibit G.

15. A lattice pattern for strength and stability could be easily attained with the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D.), Production Number B001196. Simply alternating the heights of the triangles as shown in



Exhibit F. would permit a lattice pattern.

16. The combination of triangles and lateral ribs in the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, provides the stiffness necessary to assure perfect straight lines. The horizontal structural ribs provide “Structural Rib Re-enforcement SRR™ for perfect straight lines.” The X pattern of the B.E.A.S.T. design spacer between its feet is unnecessary because the angular walls of the triangles provide angular stiffness in a more efficient manner with less material utilization.

17. The triangle pattern of the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, provides “Stable Sure-gripping Footprint SSF™ for stability” because it is flat on its bottom side without any surface disturbing protrusions and allows for attachment with nails.

18. The triangle pattern of the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, provides for reverse application because it is flat on both sides of its foot without any surface disturbing protrusions and pavers can be installed over the feet.

19. The Opposition Brief refers to the expert report of Robert Dealey (§ 28) where he has stated that the cut away portions and reduced depth of the solid fill areas help to minimize the use of plastic, thereby reducing the expense of manufacturing the products. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, has no solid fill areas in the horizontal plane, thereby reducing the expense of manufacturing the product to its optimum. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

20. The Opposition Brief further refers to the expert report of Robert Dealey (§ 54, 58-60) where he states that knit lines, areas where the flows of hot plastic meet, can create weak spots in



the finished product. He specifically refers to the x-shaped legs on the spacers permitting the flow of hot plastic during the injection molding process to move in such a way that the seam lines do not occur at structurally critical places, such as the apex of the foot. An engineer would normally use a computer program, such as Moldflow, to determine the location of the knit lines in a complex design such as paver edging. The locations of knit lines are determined by gate locations, the sites where plastic enters the mold, and such a program permits the operator to simulate different gate locations in order to avoid structurally critical locations. While we have no proof that this was done for the triangle design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, we do know that Royal Plastics, the molder, had no objection to the moldability of this design and, in fact, prepared the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, for BrickStop. Consequently, the x-shaped legs on the spacers were not essential to the function of the design to assure the seam lines do not occur at structurally critical places as the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, did not have them and the prototype was perfectly functional. They were therefore essentially decorative and distinctive in nature as additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

21. In fact, BrickStop did indeed initially place the B.E.A.S.T. in production without the x-shaped legs on the spacers as depicted in the drawing titled Composite Brick Retainer and dated December 18, 2000 (Exhibit H.), Production Number B001197. Note that a simple rib is used in place of the X-shaped legs. This design performed perfectly well and seam lines did not occur at structurally critical places in the design.

22. The Opposition Brief further refers to the expert report of Robert Dealey (¶¶ 54, 58-50)

where he states that the ejector pin pads are placed on the foot at those areas where the effects of the shrinkage of plastic as it cools is likely to make the connections against the mold tightest and in greatest need of the ejection pins for removing the finished piece. By using the large size ejector pads, the mold maker always has the option of using sturdier ejection pins as opposed to those which are smaller but have a tendency to break more often. While these statements are technically accurate, Mr. Dealey fails to mention the option of placing only part of the ejector pin under the wall of the part such as shown in Exhibit I. In this way, the ejector pin can be large enough to avoid becoming a maintenance problem without the need for an ejector pin pad, thus using less material. The design depicted in the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, does not incorporate ejector pin pads. They were therefore essentially decorative and distinctive in nature as additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

23. The Opposition Brief states, "The B.E.A.S.T. functions because the shape of the foot tapers as it moves away from the retaining wall allowing the product to curve inwardly without overlapping the feet." In our conversation with Andrew Savoie, he informed me that the minimum recommended paving curve is a 3 foot radius and the smallest radius he has ever seen was 2 feet. Exhibit J. shows the B.E.A.S.T. bent into a circle. If the outer walls of the foot were straight and emanating perpendicularly from the vertical wall as illustrated by the dashed lines, the B.E.A.S.T. would be capable of a 9 inch radius. Therefore, the angles on the outer contour of the base have no practical value and exist solely for decorative and distinctive value.

24. In his report, Robert Dealey (¶31) describes "the Valley View foot has a design feature of two ribs positioned approximately a 60° included angle between the wall and the first anchoring opening, in essence functioning as the support mechanism." The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production

Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

25. In his report, Robert Dealey (§32) describes, “Another rib joins the chevron shaped stake hole with the first spike anchor hole and functions to absorb forces placed against the wall through the anchoring foot and to the stake,” The addition of the chevron, Exhibit G., permits the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, to perform this function with only the chevron, one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

26. In his report, Robert Dealey (§33) describes, “The third anchoring hole is connected to the wall through the straight outer walls that have a double angle and radius termination. The inner wall of the chevron shaped opening also connects to the outer angled walls and provides strength acting as a rib like structure,” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only the chevron, one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

27. In his report, Robert Dealey (§34) describes, “Two filled in areas, at the bottom of the part when viewed as installed, laying between the outer ribs and connecting the outer edges of the “V” shaped feature functions as a linear connecting mechanism and acts as a restraint for torsional forces and/or twisting in “X” axis (running the length of the part).” In my discussion



with Andrew Savoie, he informed me that lateral forces are the principle concern and torsional forces are not a problem with paver edging installations. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

28. In his report, Robert Dealey (§35) describes, "Another feature is positioned between the anchoring feet (with the exception of the last anchoring foot on each end), is connected to the wall and then with a series of four ribs connects to the adjacent anchoring feet. This feature remains in place when the installation calls for a straight section of the wall and provides additional restraint to the wall and increases stiffness. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one cross rib and its supporting triangle ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

29. In his report, Robert Dealey (§36) describes, "Each of the other feet has four ejector pins and pads. When the ejector pins are positioned on part features that are not at least five-sixteenths of an inch in diameter, ejector pads are added to the part structure and function as a place to install ejector pins of a diameter sufficient that ejector pin breakage will not be problematical." The ability to eject the part with five-sixteenths of inch in diameter ejector pins without the use of ejector pin pads is demonstrated in Figure I. as discussed in paragraph 20. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and



F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

30. In his report, Robert Dealey (§37) describes, “The four angled connectors also function as a flow leader runner system feeding plastic to the anchoring foot during the injection phase of the injection molding cycle. This feature prevents or greatly reduces the location of two plastic flow fronts forming a knit line at the radius termination at the outer anchoring hole. The presence of a knit line at an area of high stress could result in a premature failure under tensile pressures concentrated in that area.” The ability to fill this part without creating knit lines in an area of high stress and without the need for the four angled connectors functioning as a flow leader system is discussed in paragraph 20. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one cross rib and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

31. In his report, Robert Dealey (§38) describes, “The connecting ribs can be cut or removed when installing the paver restraint in curved landscaping. Removal will allow the wall to be bent to conform to the desired contour.” This is true, however it is not the most efficient method of removing the paver restraint as the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one rib and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

32. In his report, Robert Dealey (§39) describes, “The end anchoring foot, as opposed to the other feet, has a solid wall on top of the anchoring foot (when viewed as installed). This solid wall with interruptions at only the spike/stake openings serves two functions. The first is to provide maximum support to the wall and strength for location preference during installation when only the end units are anchored.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function without a solid wall on top of the anchoring foot and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder. As a further note, discussions with paving practitioners revealed that none had ever seen or heard of an installation where only the end feet were anchored.

33. In his report, Robert Dealey (§40) describes, “The second function of the solid wall is to provide an area for safety warnings, material recycling information and/or other pertinent information that can be permanently molded into the part.” Safety warnings and other pertinent information can be placed on the vertical wall of the product by a hot stamping, a label or molded into the product, thereby requiring no solid wall on top of the anchoring foot. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function without a solid wall on top of the anchoring foot and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

34. In his report, Robert Dealey (§41) describes, “It is my opinion, as an expert in the design and injection molding of plastics, that all of the features found on the Valley View Diamond Edge product that I inspected are a function of the design intent for the stated application of providing a restraint in landscaping applications.” It is my opinion, as an expert in the industrial

design, mechanical design and injection molding of plastics, that the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function without any of the additional design details discussed in the previous paragraphs by Mr. Dealey and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

**Rebuttal of Mr. Robert Dealey's Expert Witness Report's Discussion of BrickStop Corporation's B.E.A.S.T. and Son of B.E.A.S.T. Design Details.**

35. In his report, Robert Dealey (§42) describes, "The BrickStop product is a long "L" shaped component distinguished by a wall approximately 0.195 inch wide and about 1.750 inches tall. The intent is obvious as the function of one side of the shorter or horizontal portion of the "L" wall is to form an edging for retention of paving bricks or other landscaping blocks. The vertical or longer portion of the "L" contains an anchoring foot arrangement that generally repeats itself after the end units. The anchoring foot is distinguished with two ribbed walls on both sides, then doubled angled to a radius termination opposite the wall." The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

36. In his report, Robert Dealey (§43) describes, "The anchoring feet function as a support to the wall and serve as a platform that secures the wall into the desired position for the application." The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with anchoring feet that have only one hole and supporting ribs and is therefore, the optimum



functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

37. In his report, Robert Dealey (§44) describes, “The anchoring feet have a series of two openings where landscaping spikes can be driven into the ground to maintain the desired location and absorb any force exerted on the wall from the pavers or landscape material. The spikes can be straight sided or fluted; the quad lobed hole further from the wall appears to be suitable for a spiral spike. However, a straight spike or stake could also be utilized.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

38. In his report, Robert Dealey (§45) describes, “The BrickStop product has two holes where spikes could be driven. The first spike hole is slightly greater than one inch from the inside wall. The second spike hole is about two and three-eighths inches from the inside wall.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs as discussed in paragraph 15 (Exhibit F.) and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

39. In his report, Robert Dealey (§46) describes, “The function of these anchoring feet is clear and with the option of the installer to utilize one of the two options for securing the foot to the ground thereby supporting the wall in contact with the paving blocks.” The design depicted



by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

40. In his report, Robert Dealey (§47) describes, “The use of this product, from a design standpoint is that of a static application. The forces acting on the foot and spike once installed are not repeatedly applied as in a dynamic application. In this regard when the foot is outside the paver the forces acting on the plastic are compressive. When the installation has the foot placement under the paver, the forces acting on the plastic are in tension.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

41. In his report, Robert Dealey (§48) describes, “Therefore, the design and function of the anchoring foot must take into account both compression and/or tensile forces after installation.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

42. In his report, Robert Dealey (§50) describes, “Additionally, the BrickStop foot has two ribs positioned at approximately a 60° included angle between the wall and the first anchoring opening, in essence functioning as the support mechanism. The opening between the two ribs

allows for some flexing in non-linear applications while providing maximum wall support for this structure.” There are several competitive designs that have a solid wall with no opening and according to Andrew Savoie, and their advertising, are perfectly suitable for curved paver sections.

43. In his report, Robert Dealey (§51) describes, “Another rib joins the quad lobed hole with the first spike anchor hole and functions to absorb forces placed against the wall through the anchoring foot and to the stake.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

44. In his report, Robert Dealey (§52) describes, “Two filled in areas, at the bottom of the part when viewed as installed, laying between the outer ribs and connecting the outer edges of the “V” shaped feature function as a linear connecting mechanism and acts as a restraint for torsional forces and/or twisting in the “X” axis (running the length of the part).” In my discussion with Andrew Savoie, he informed me that lateral forces are the primary concern and torsional forces are not a problem with paver edging installations. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

45. In his report, Robert Dealey (§53) describes, “Another feature is positioned between the anchoring feet (with the exception of the last anchoring foot on each end), and is connected to

the wall and then with a series of four ribs connects to the adjacent anchoring feet. This feature remains in place when the installation calls for a straight section of the wall and provides additional restraint to the wall and functions to increase stiffness.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one cross rib and its supporting triangle ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

46. In his report, Robert Dealey (§54) describes, “The four angled connectors also function as a flow leader runner system feeding plastic to the anchoring foot during the injection phase of the injection molding cycle. This feature prevents or greatly reduces the likelihood of the two plastic flow fronts forming a knit line at the radius termination at the outer anchoring hole. The presence of a knit line at an area of high stress could result in a premature failure under tensile pressures concentrated in that area.” The ability to fill this part without creating knit lines in an area of high stress and without the need for the four angled connectors functioning as a flow leader system is discussed in paragraph 20. Royal Plastics, the molder, had no objection to the moldability of this design and, in fact, prepared the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, for BrickStop. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function with only one hole and its supporting ribs and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

47. In his report, Robert Dealey (§55) describes, “The end anchoring foot, as opposed to the other feet, has a solid wall on top of the anchoring foot (when viewed as installed). This solid



wall with interruptions at only the two spike openings serves two functions. The first is to provide maximum support to the wall and strength for location preference during installation when only the end units are anchored.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function without a solid wall on top of the anchoring foot and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder. As a further note, discussions with paving practitioners revealed that none had ever seen or heard of an installation where only the end feet were anchored.

48. In his report, Robert Dealey (§56) describes, “The second function of the solid wall is to provide an area for safety warnings, material recycling information and/or other desired information that can be permanently molded into the part.” Safety warnings and other pertinent information can be placed on the vertical wall of the product, thereby requiring no solid wall on top of the anchoring foot.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, requires no solid end feet and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

49. In his report, Robert Dealey (§57) describes, “Each foot has ejector pins, utilized to eject the part from the mold in the injection-molding process. The end foot has three ejector pin marks. The ejector pins are placed on a solid surface and only show as round impressions of approximately five-sixteenths of an inch in diameter.” The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, requires no solid end feet and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive



purposes to enhance the desirability of the product in the eyes of the beholder.

50. In his report, Robert Dealey (§58) describes, “Each of the other feet has four ejector pins and pads. When ejector pins are positioned on part features that are not at least five-sixteenths of an inch in diameter, ejector pads are added to the part structure and function as a place to install ejector pins of a diameter sufficient that ejector pin breakage will not be problematical.”

Robert Dealey (§59) further states, “Ejector pin placement is a function of determining how and where the molded plastic will shrink inward and onto the mold features. Experience tells us that openings and inner vertical walls will required the greatest forces where resistance to part removal (ejecting) will occur. Accordingly, ejector pins are then positioned in or near these areas. Polyethylene and Propylene have high shrinkage rates, which is partly a function of wall thickness, the grade of material and processing conditions. However, PE and PP have high shrinkage numbers that often range from 0.020 to 0.040 inch per inch and considerable force is often necessary to eject a part from the mold.” Robert Dealey (§60) goes on to say, “Ejector pins are always placed on the side of the mold, normally referred to as the “B” side, core side or ejector side and with some exceptions, where the ejector mechanism is located on the injection-molding machine utilized to mold the parts.” The ability to eject the part with five-sixteenths of inch in diameter ejector pins without the use of ejector pin pads is demonstrated in Figure I. as discussed in paragraph 22. The design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, does not incorporate ejector pin pads. They were therefore essentially decorative and distinctive in nature as additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

51. In his report, Robert Dealey (§61) describes, “It is my opinion, as an expert in the design and injection molding of plastics, that all of the features found on the BrickStop product that I inspected are a function of the design intent for the stated application.” It is my opinion, as an

expert in the industrial design, mechanical design and injection molding of plastics, that the design depicted by the drawing titled Composite Brick Retainer and dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196, performs this function without any of the additional design details discussed in the previous paragraphs by Mr. Dealey and is therefore, the optimum functional design. Any additional material beyond this optimum functional design is used for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder.

**Comparison of the Triangle Design Depicted by the Drawing Titled Composite Brick Retainer and Dated October 3, 2000 (Exhibit D., E. and F.), Production Number B001196 with Competitive Products.**

52. Valley View Industries has elected to copy the appearance of the B.E.A.S.T. Exhibit K. shows the B.E.A.S.T. placed directly on top of the Valley View Industries' Diamond Edge #DPE-8. Clearly it is nearly an exact copy. All of the paver edging competitors except Valley View have a different look from the B.E.A.S.T. and many sell for less than the B.E.A.S.T. It is obvious that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

53. Andrew Savoie said that all of the paver edging marketed in North America is acceptable from a strength and function standpoint. In addition, in his 23 years of experience in the field, he has never seen a failure due to paver edging. When failures do occur, they are due to improper, or often complete lack of, preparation of the base or the use of lawn edging, which is too weak, instead of paver edging. He also informed me that 70% of jobs are done in the normal, not reverse, placement of the paver edging because it is cheaper to install that way. All of the paver edging competitors except Valley View have a different look from the B.E.A.S.T. and many sell for less than the B.E.A.S.T. It is obvious that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T. Indeed, even

Valley View offers other paver edging that does not copy the appearance of the B.E.A.S.T.

54. The Valley View Diamond-Lok ("L Shape") Flexible 15 Foot (DLLF-15) and its companion Rigid 15 Foot (DLLR-15), Exhibit L., is such a product with a solid, tombstone shaped, base. The flexible version is for curves and the rigid version is for straight edges, although perforated V slots are provided on the rigid version to permit curves to be made. It is also manufactured by Valley View Industries and offers nearly the same features as the other paver edging on the market. It does not offer the lattice pinning option, however that could be achieved by alternating the hole locations in the bases. It is molded of medium density polyethylene (MDPE). Valley View Industries is sufficiently confident of the functionality of this product to offer a twenty year guarantee against cracking, fading or decomposing of this product. This product demonstrates that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

55. The Bulldog-Edg™ product, Exhibit M., is offered by Lyle Edgings Inc. and is molded of polyvinyl chloride (PVC). It is similar to the Diamond-Lok except that it offers two pin holes instead of one and does not offer a separate rigid variant. This product demonstrates that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

56. The PaveMaster, Exhibit N., is manufactured by Master Mark Plastics and is molded of high density polyethylene (HDPE). It is similar to the previous two products in that it has a solid base, however it has what appears to be a truncated triangle shape and one of its holes has an H configuration. This product demonstrates that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

57. The Spikedge™, Exhibit O., is manufactured by Unilok and has a different appearance in that it has three holes in its solid base, one of which is offset from the other two. It also offers molded-in spikes and a removable "stabilizer tab" which can be removed in order to permit



bending for curved sections. This product demonstrates that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

58. The Gator Edge, Exhibit P., is offered by Alliance Designer Products Inc. and is offered in both rigid and flexible versions. Its flexible version has a unique appearance in that it has only enough base for a hole, thereby giving it the look of a wall with fingers protruding from it. The rigid version has as solid base with small tabs for the holes. This product demonstrates that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

59. The Snap Edge, Exhibit Q., is made by Snapedge Canada Ltd., which offers a lifetime guarantee for this product. It has a distinctive appearance of its own and is made of recycled materials. Ribs containing pin holes protrude from its vertical wall and connect with an outer rib running along the periphery of the edging. This outer rib is cut when the paver edging is to be used for a curve. This product demonstrates that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

60. The EdgePro®, Exhibit R., is made of polyvinyl chloride (PVC) by Dimex Corporation and is offered in two styles. EdgePro®, Paver Restraint has a solid tombstone base with a single hole and is intended for both straight and curved installations. EdgePro®, Rigid Restraint is “extra rigid for big jobs with straight installations.” It has a nearly solid base, broken only by the pin holes, of which there are three in different shapes. These products demonstrate that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

61. From the advertising literature, the Pave Edge, Exhibit S., is manufactured by Pave Tech and appears to be constructed of two extruded strips rather than molded. The rigid version has a continuous triangle extrusion while the flexible variant has triangular shaped base segments. Both slide into slots in the vertical wall. The continuous extrusion can be cut to permit its use for

curves. The triangular wall construction gives this product a unique appearance. This product demonstrates that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

62. In my opinion, Valley View Industries has elected to copy the appearance of the B.E.A.S.T. Other designs are radically different, yet they accomplish the function. All of the paver edging competitors have a different look from the B.E.A.S.T. and many sell for less than the B.E.A.S.T. It is obvious that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T.

**Comparison of High and Low Pressure Injection Molding.**

63. In his report, Mr. Dealey (§ 9) has opined that either polyethylene (PE) or polypropylene (PP) have been used for this application. The B.E.A.S.T. is indeed manufactured from polypropylene as is the Valley View Paver Edge, according to the PP symbol engraved in the product. However, due to the nature of the low-pressure foam molding process, the Valley View Paver Edge will have a lower tensile strength than the standard injection molded B.E.A.S.T. according to the Society of the Plastics Industry Plastics Engineering Handbook, page 586, column 2 (Exhibit T.). “The apparent tensile strength of any foamed material is less than that of the same material in a solid configuration. The strength is reduced considerably because of the density reduction and stress concentrations caused by each individual cell.” Further down the page, the author discusses the relative stiffness of the standard injection molding vs. the low-pressure foam molding process where he states, “Compared to an equivalent weight of solid plastic, .250 foam can have twice the rigidity.” Taken together, these two statements indicate that the Valley View Paver Edge is both weaker and stiffer than the B.E.A.S.T. – therefore more likely to fail in bending to suit a curved paving configuration.

64. It is my opinion, as an industrial designer and an expert and consultant in the fields of plastic product design, injection molding and tooling design, that the B.E.A.S.T. and Son of

B.E.A.S.T. use additional material beyond the optimum functional design for decorative and distinctive purposes to enhance the desirability of the product in the eyes of the beholder. Furthermore, there is ample evidence that it is possible to perform the function of a paver edging and be competitive without copying the appearance of the B.E.A.S.T. or Son of B.E.A.S.T. As additional information becomes available, I reserve the right to add to my opinions accordingly.

Respectfully submitted:

*Jordan I. Rotheiser 8/19/08*  
Jordan I. Rotheiser

August 19, 2008



# **Exhibit A**

# **Exhibit A**

**JORDAN I. ROTHEISER**

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**PROFESSIONAL EXPERIENCE**

**1964 to Present      Rotheiser Design Inc.**  
**3075 University Ave.**  
**Highland Park, IL 60035**  
**847-433-4288**  
**rotheiser@sbcglobal.net**

Rotheiser Design Incorporated provides industrial design and engineering services for plastic products. These services include the creation of product concepts, appearance, function, ergonomics, and engineering. Rotheiser Design Inc. executes projects from concept through production or any portion thereof. Included are the completion of troubled projects started by others and consultation on product failures in the field. Other work includes the creation of books, seminars and periodicals on plastics design and expert witness consultation and testimony in lawsuits.

Projects include:

- Developed first low pressure molding compound outdoor refrigeration unit housings.
- Developed first successful plastic outdoor refrigeration unit housings.
- Designed first plastic housing street sweeper.
- Miniaturized telephone headset connectors using plastics.
- Miniaturized electronic intravenous drop detector using plastics.
- Developed first thin-wall injection molded disposable cocktail glass.
- Designed first injection mold using "lost wax" process.
- Developed first plastic lawn and garden wheels.
- Developed first plastic caster using recycled polypropylene.
- Developed first disposable humidifiers and atomizers for inhalation therapy



**Jordan I. Rotheiser**  
**Resume**

**Page 2.**

- Designed first plastic underwater camera housing.
- Designed first mold using prototype DME collapsing core.
- Designed first commercial living hinge package (excluding closures)
- Developed miniaturized plastics hearing aid housing.
- Developed first polypropylene electrical bobbin.
- Designed first plastic fire extinguisher gauge

**1963 to 1964                      Compagnie de l'Esthetique Industrielle (Raymond Loewy, Paris)**

**1960 to 1963                      Abbott Laboratories**

- Designed first plastic microdrip intravenous system.
- Developed first plastics assembly system using induction heating.
- Developed first thermoplastic intravenous system.

**1959 to 1960                      General Motors Corp.**  
**Fisher Body Division Styling**

**EDUCATION**

BS, Industrial Engineering, University of Illinois, 1960  
BA, Industrial Design, University of Illinois, 1960

**PUBLICATIONS**

**Books**

Plastics chapter, *Handbook of Materials for Product Design*, McGraw-Hill, 2001

Joining of Plastics, *Handbook for Designers and Engineers*, Hanser Gardner, Oct., 1999

Joining of Plastics, *Handbook for Designers and Engineers 2<sup>nd</sup> Edition*, Hanser Gardner, June, 2004

**Jordan I. Rotheiser**  
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**Page 3.**

Plastics Product Design chapter, *Modern Plastics Handbook*, McGraw-Hill, March 1999

Industrial Design chapter, *Handbook of Plastics Material and Technology*, John Wiley & Sons, NY, 1990

Industrial Design article, *American Educator Encyclopedia*, The United Educators, Inc., 1963

**Magazines**

"Staking of Plastics", *Plastics Decorating Magazine*, July/August 2007

"Assembly Innovations Take Center Stage at NPE 2006", *Plastics Decorating Magazine*, July/August 2006

"The Process of Vibration Welding, *Plastics Decorating Magazine*, July/August 2005

"Laser Welding of Plastics, *Plastics Decorating Magazine*, July/August 2002

"Automation and Volume Decorating", *Plastics Decorating Magazine*, April/May 2002

"K2001 Technology Review", *Plastics Decorating Magazine*, January/February 2002

"Laser Marking of Plastics, *Plastics Decorating Magazine*, November/December, 2001

"Decorating Hollow Parts," *Plastics Decorating Magazine*, June/July, 2001

Are Metallized Plastics Returning," *Plastics Decorating Magazine*, April/May, 2001

"In-Mold Decorating of Plastic Parts," *Society of Plastic Engineers ANTEC paper*, May, 2001

"Designing For Decorating And Assembly - Warpage," *Plastics Decorating Magazine*, March, 2001

"Heat Staking and Insertion," *Plastic Decorating Magazine*, Nov., 2000

"In-Mold Decorating," *Plastic Decorating Magazine*, Aug., 2000, Oct., 2006

"Design for Rotational Molding," *Society of Plastics Engineers ANTEC paper*, May, 2000

"The Bigger Picture," *Plastics Engineering Magazine*, January, 1997

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**Page 4.**

"Hot Stamping Reaches New Level of Quality," *Plastics Design Forum*, Nov./Dec., 1990

"Appearance Factors in Hot Stamping," *Design for Decorating RETEC*, Oct., 1990

"Czar of the World," *Plastics Design Forum*, May/June, 1989

"Tomorrow's Design Challenges Roundtable," *Plastics Design Forum*, Jan./Feb., 1987

**EDUCATIONAL SEMINARS CREATED AND PRESENTED**

Assembly of Plastics Update - University of Wisconsin - Milwaukee - 6 seminars  
between 6/91 and 12/94

Assembly Seminar - SPE - 5/92, 5/94, 6/94, SPE Chicago Section - 3/94, 4/95 and 9/97

Basic Principles of Assembly and Use of Fasteners - University of Wisconsin -  
Milwaukee - 1994

Cost Effective Assembly of Plastic Parts - SPE - 9/95, 5/96, 6/97, SPE Chicago Section  
- 1990, SPE Wichita Section - 2/97

Cost Effective Decorating of Plastics Parts - SPE - 5/92, 5/94, 6/94, 9/95, 6/97, SPE  
Chicago Section - 1990, SPE Wichita Section - 2/97, Plastics Fair Seminars - 11/93, The  
Plastics Seminars - 10/95

Cost Effective Part Design for Injection Molded Products - SPE - 3/96

Decorating and Finishing Plastic Products - The Plastics Seminars and SPE Chicago  
Section - 2/93

Design of Injection Molded Parts - The Plastics Seminars - 4/92, University of Wisconsin  
- Milwaukee - 12/95, SPE Chicago Section - 3/96, University of Akron - 11/05, 11/07,  
1/07, 12/07, and 1/08.

Designing to Sell - Presented at Designing Plastic Products Symposium, Rockford, IL -  
6/81

Designing for Outdoor Applications - University of Wisconsin - Milwaukee - 3/94

Environmentally Conscious Plastic Product Design - Ohio University - 3/94, 4/94, 5/94

Flexible Plastic Containers - University of Wisconsin - Milwaukee - 9/94



**Jordan I. Rotheiser**  
**Resume****Page 5.**

Fundamentals of Decorating Plastics - Society of Manufacturing Engineers - 5/97

Fundamentals of Design for Injection Molded Products - Modern Plastics Seminars - 17 seminars between 10/81 and 6/86

Joining and Fastening Plastic Parts - The Plastics Seminars - 11/96 and 4/98

Labeling and Decorating of Plastics - University of Wisconsin - Milwaukee - 9/94

Plastics Finishing and Decorating Update - University of Wisconsin - Milwaukee - 6 seminars between 6/91 and 12/94

Plastic Packaging, Labeling and Decorating - University of Wisconsin - Milwaukee - 1994

Plastic Packaging Materials - University of Wisconsin - Milwaukee - 9/94

Plastic Part Design - The Finishing Touches - SPE - 18 seminars between 5/82 and 6/91

Rigid Plastic Containers and Closures - University of Wisconsin - Milwaukee - 9/94

Snap Fits, Press Fits and Joining of Plastics - University of Wisconsin - Madison - 11/00, 12/01, 12/02

Snap Fits, Press Fits and Welding of Plastics - SPE Kansas City Section - 3/00, SPE Chicago Section - 4/99 and 4/00, National Plastics Exposition - 6/00, American Plastics Council - 1/01, Plastics USA - 10/01, San Francisco 5/02, Philadelphia, 3/03, National Plastics Exposition - 6/03, Plastics USA - 10/04, Boston 5/05, Milwaukee 9/05 and 6/08, Charlotte 5/06, National Plastics Exposition - 6/06, Cincinnati - 5/07, Irvine - 9/07,

**PATENTS**

<u>Patent Number</u>	<u>Year Issued</u>	<u>Title</u>
6,905,274	2005	Liquid Applicator
5,935,281	1999	Filter Apparatus
4,541,541	1985	Tamper-Resistant Closure for Dispenser
4,170,384	1979	Molded Wheel having a Decorative Side Wall

**Jordan I. Rotheiser**  
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**Page 6.**

D249679	1978	Molded Wheel
D249678	1978	Molded Wheel
3,664,466	1972	Wheel Wedge
3,635,232	1972	Rope Retaining Stake

**PROFESSIONAL AFFILIATIONS & AWARDS**

Society of Plastics Engineers - Offices Held:

Member of SPE since 1960

House Committee - Chicago Section - 1 year

Professional Activities Committee Chairman - Chicago Section - 1 year

Board of Directors - Chicago Section - 3 years

Membership Chairman - Chicago Section - 3 years

Created SPE Educational Traveling Display

SPE International Membership Chairman - 1 year

Charter Member - Plastics Product Design and Development Division

Board of Directors - Plastics Product Design and Development Division - 12 years

Annual Technical Conference Program Chairman, Plastics Product Design and Development Division - 5 years

Annual Technical Conference Program Chairman. Decorating and Assembly Division - 2 years

SPE International Councilor - Plastics Product Design and Development Division - 3 years

SPE International Councilor - Decorating and Assembly Division - 8 years

Chairman-Elect - Plastics Product Design and Development Division - 1 year

Chairman - Plastics Product Design and Development Division - 1 year

Chairman - Plastics Product Design and Development Division Plastics Certification Committee

Past Chairman - Plastics Product Design and Development Division - 1 year

Plastics Product Design and Development Division Forum - Conference Chairman - 4 years

Charter Member - SPE Rotational Molding Division

Industrial Designers Society of America:

Professional Member

Member of Chicago Chapter Board of Directors - 5 years

**Jordan I. Rotheiser**  
**Resume**

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**Page 7.**

**Awards**

Elected Fellow of the Society of Plastics Engineers, Inc.- May 2000

Elected Honored Service Member of the Society of Plastics Engineers, Inc.- May 2002

Elected to membership in the Plastics Pioneers Association - October 2001

Society of Plastics Engineers Plastics Product Design and Development Division  
Recognition and Appreciation of contributions to the Division through serving on the  
board of directors from 1987-1994 and serving as Chairman from 1995-1996. Received  
1996

Pride Award for Divisional Excellence - Society of Plastics Engineers Product Design  
and Development Division. Received 1996

Chairman's Cup for Contributions Toward Creating Society of Plastics Engineers  
Plastics Product Design and Development Division. Received 1995



**JORDAN I. ROTHEISER**

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**LITIGATION SUPPORT EXPERIENCE ADDENDUM**

Client company is underlined.

Case: 3M Innovative Properties v. Illinois Tool Works, Inc.  
Matter: Patent Infringement  
Project: Wrote expert reports.  
Date: 2007 to present

Case: Gary A. Downs v. Isle of Capri Casinos, Inc. et al  
Matter: Product Liability  
Project: Wrote expert report and was deposed.  
Date: 2006 to present

Case: Inter Partes Reexamination of Patent for Radio Shack Corporation  
Matter: Patent Validity  
Project: Wrote Affidavit  
Date: 2004 to 2007

Case: Robert Gorman v. Suncoast Corporation  
Matter: Product Liability  
Project: Wrote expert report.  
Date: 2005 to 2007

Case: RTC Industries, Inc. v. William Merit & Associates  
Matter: Patent Infringement  
Project: Wrote declaration  
Date: 2004

Case: Seiko Epson v. Dynamic Print, et al  
Matter: Patent Infringement  
Project: Wrote declaration and was deposed  
Date: 2003 - 2005

Case: Parfums de Coeur, Ltd. v. LePapillon, Ltd.  
Matter: Product Liability  
Project: Wrote expert witness report and was deposed  
Date: 2003 – 2004

Case: Mark A. Freeman and Timothy K. Stringer v. Gerber Products Company  
Matter: Patent infringement  
Project: Wrote expert witness report and was deposed  
Date: 2003 to 2006

Case: ADC Telecommunications, Inc. v. Panduit Corp.  
Matter: Patent infringement  
Project: Wrote declaration, expert witness report and was deposed.  
Date: 2001-2003

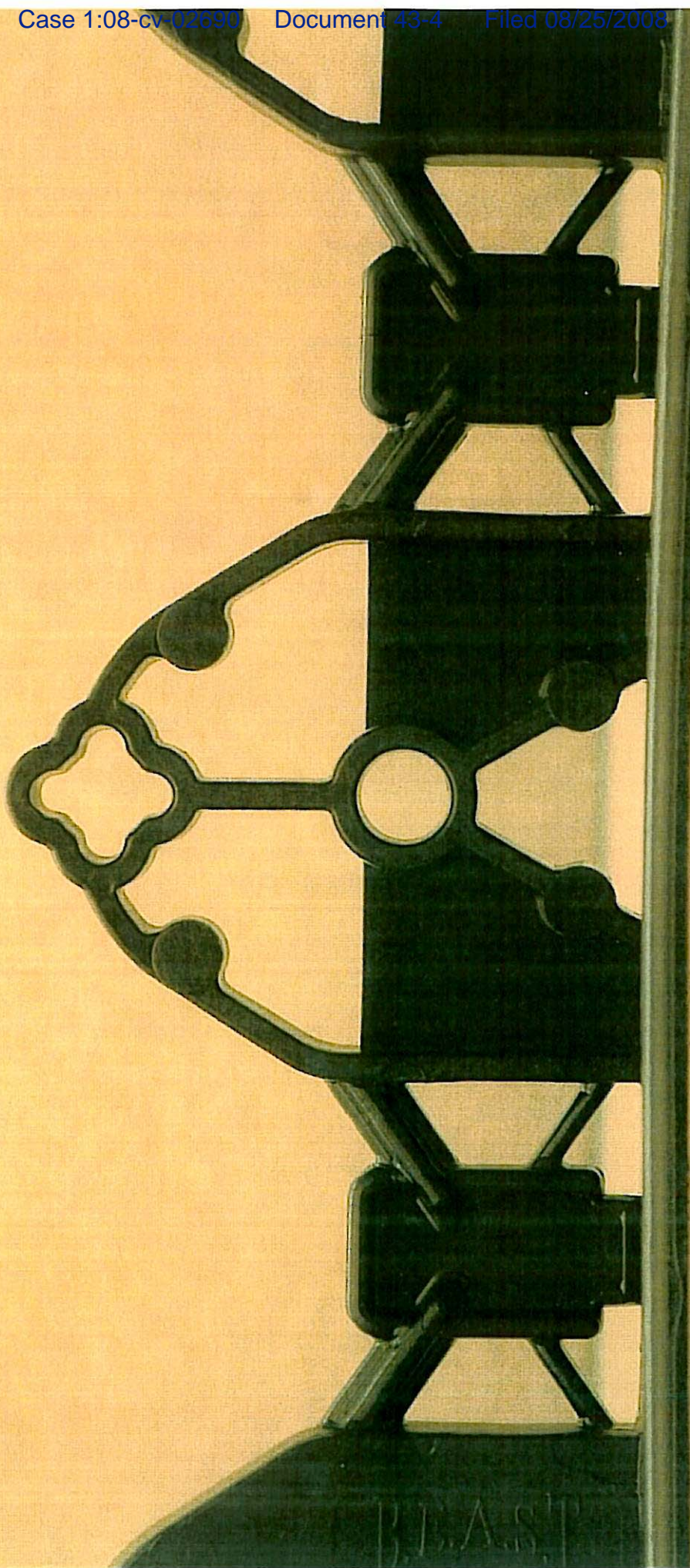
Case: Don De Cristo Concrete v. American Allsafe Company, Inc., Flex-O-Lite, Inc. and Jackson Products, Inc. dba Services & Materials Company  
Matter: Patent infringement  
Project: Wrote expert witness report and was deposed.  
Date: 2000-2002

Case: Plastics Research Corp., Inc. v. Brite-Millwork, Inc., Avon Plastics, Inc., Weyerhaeuser USA, Inc.  
Matter: Patent infringement  
Project: Wrote expert witness report and was deposed.  
Date: 2001-2002

Case: Geomatrix, LLC and David A. Potts v. Infiltrator Systems, Inc.  
Matter: Trade secrets  
Project: Was deposed.  
Date: 2007

# **Exhibit B**





# **Exhibit C**



# Rosato's Plastics Encyclopedia and Dictionary



Hanser Publishers, Munich Vienna New York Barcelona



Case: 1:08-cv-02690 Document 42-5 Filed 08/25/2008 Page 3 of 4  
The use of general descriptive names, trademarks, etc., in this publication, even if the names are especially identified, is not to be taken as a sign that such names, as understood by the Trade Marks and Merchandise Marks Act, may accordingly be used freely by anyone.

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*Die Deutsche Bibliothek - CIP-Einheitsaufnahme*

**Rosato, Dominick V.:** [Plastics encyclopedia and dictionary] Rosato's plastics encyclopedia and dictionary / Dominick V. Rosato. - Munich; Vienna; New York; Barcelona: Hanser; New York: Oxford Univ. Press, 1993  
ISBN 3-446-16490-1  
NE: HST

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0.7 and 500  $\mu\text{m}$ , in wave numbers, between 14,000 and 20  $\text{cm}^{-1}$ . Molecules have specific frequencies which are directly associated with their rotational and vibrational motions. IR absorptions result from changes in the vibrational and rotational state of a molecular bond. Coupling with electromagnetic radiation occurs if the vibrating molecule produces an oscillating dipole movement that can interact with the electric field of the radiation.

For qualitative analysis, one of the best features of an IR spectrum is that absorption or the lack of absorption in specific frequency regions can be correlated with specific stretching and bending motions and, in some cases, with the relationship of these groups to the rest of the molecule. Thus, when interpreting the spectrum, it is possible that certain functional groups are present in the material and certain others are absent.

**infusible** Not capable of melting when heated, as are all cured thermoset plastics.

**ingot** A large casting that is subsequently rolled or forged.

**Inhibition and retardation** Inhibitors prevent the formation of measurable amounts of plastic under conditions that otherwise would permit such polymerization. Retarders reduce the rate at which the polymer is formed. These effects may occur as a result of a reaction between the chain-initiating species and the inhibitor or retarder. Thus, in a catalytically initiated polymerization, the inhibitor destroys the catalyst. If all the catalyst is destroyed, one observes inhibition; if part of it is destroyed, the rate of subsequent polymerizations is proportionally reduced and retardation has occurred. These phenomena occur in Ziegler-Natta type and ionic polymerizations.

**inhibitor** A substance that retards a chemical reaction. Also used in certain types of monomers and plastics to prolong life.

**Initial modulus**  $\triangleright$  modulus, initial

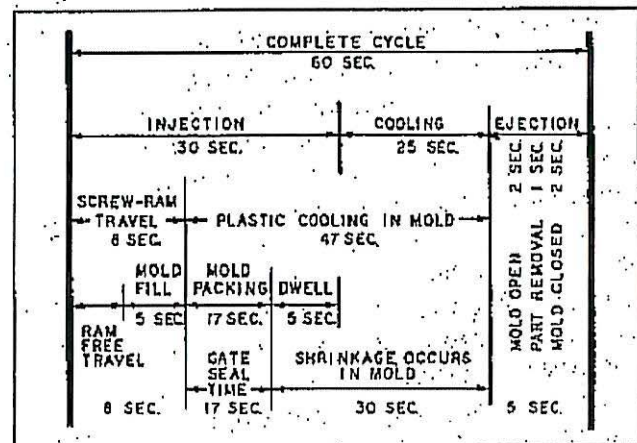
**Initiator** Source of free radicals, often peroxides or azo compounds. They are used in free-radical polymerizations, for curing thermoset plastics, and as crosslinking agents for elastomers and crosslinked polyethylene.

**Injection blow molding**  $\triangleright$  blow molding, injection

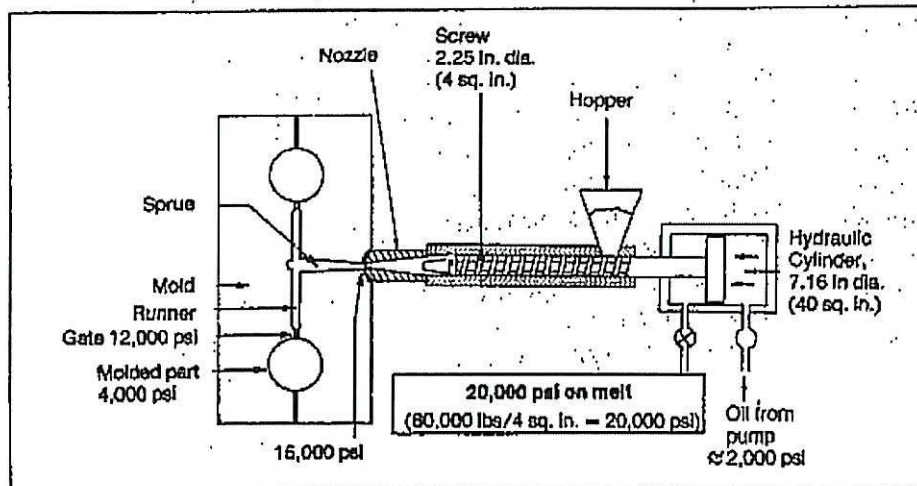
**Injection-compression molding**  $\triangleright$  coining

**Injection molding** The injection molding (IM) process is greatly preferred by designers because the manufacture of parts of complex shape and three-dimensions can be more accurately controlled and predicted with IM than with other processes. As its method of operation is much more complex than others, IM require a thorough understanding. The Figs. below show schematics of the load profile and the molding cycle that highlight the way in which the melt is plasticized (softened) and forced into the mold, the clamping system for opening and closing the mold under pressure, the type of mold used, and the machine controls.

Plastic moves from the hopper onto the feeding portion of the reciprocating extruder



Example of an injection molding cycle processing thermoplastic.



Schematic of pressure loading on plastic melt during injection molding.

# Exhibit D



**REDACTED**

# **Exhibit E**

**REDACTED**



# **Exhibit F**

**REDACTED**

# Exhibit G



**REDACTED**

# Exhibit H

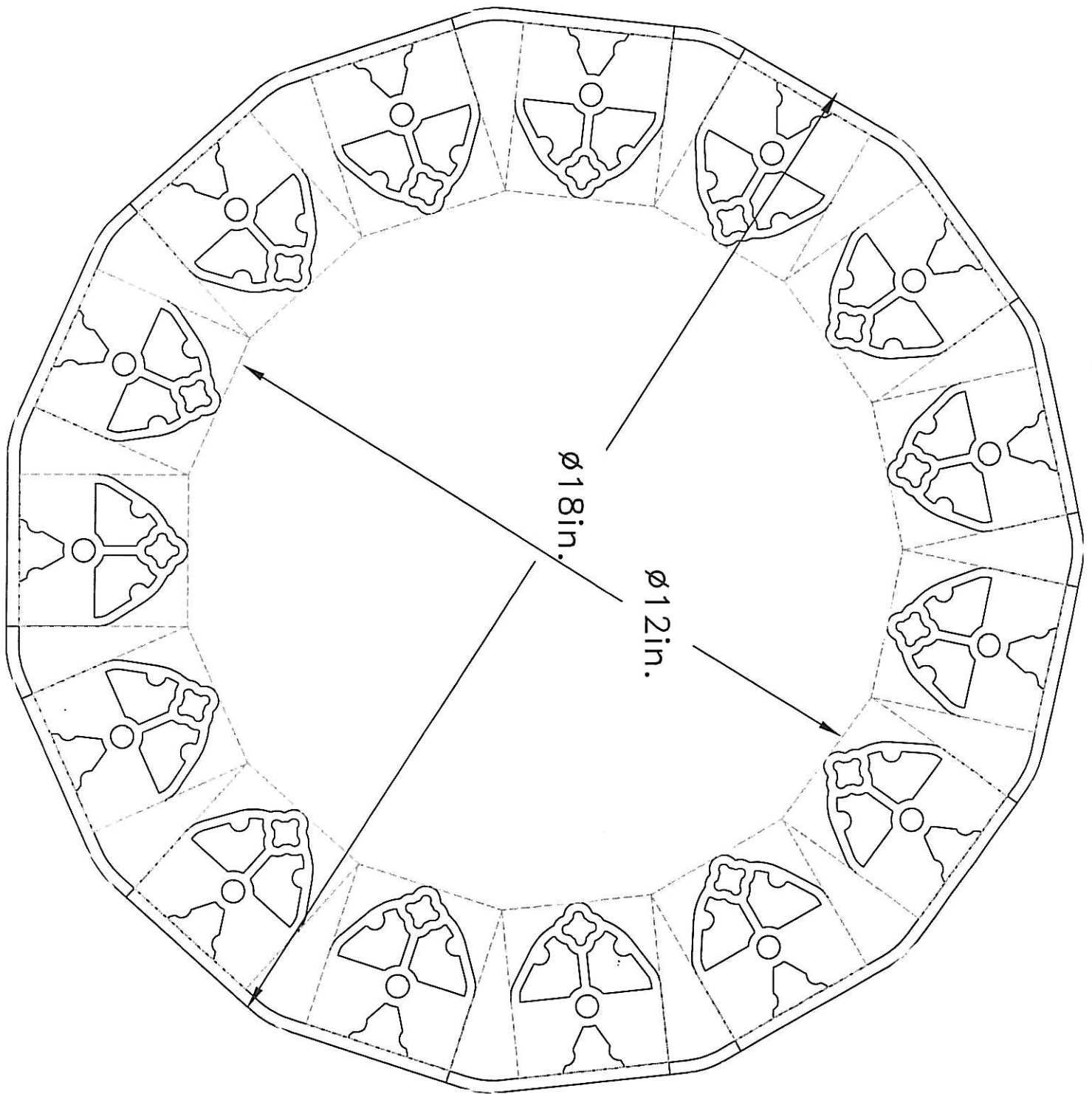
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# Exhibit I

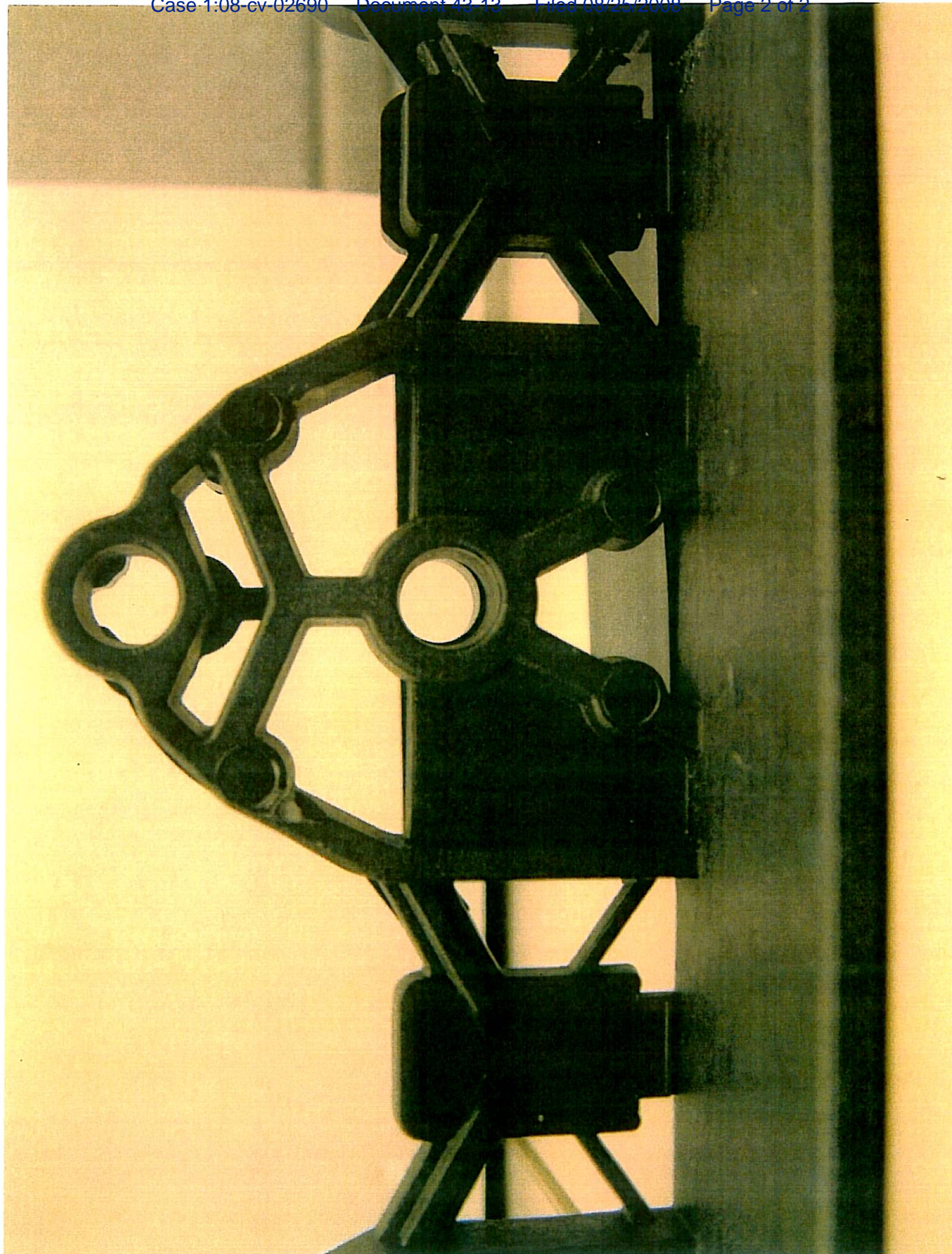
**REDACTED**

# Exhibit J



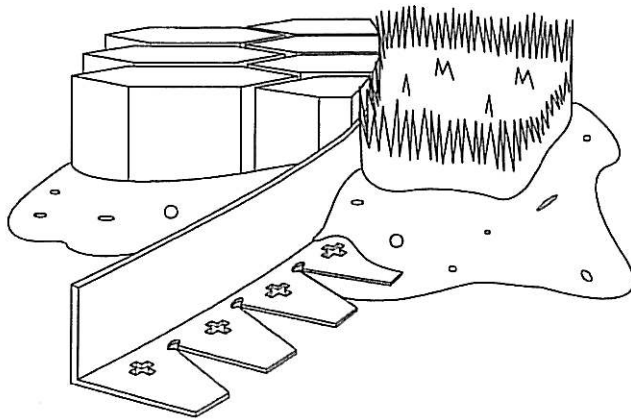


# **Exhibit K**



# **Exhibit L**



**Diamond-Lok<sup>®</sup> ("L Shape") Flexible 15 Foot (DLLF-15)***Brick/Paver Edging***Product Diagram & Installation Details****Product Specifications**

**Material:** Medium density polyethylene with UV inhibitor

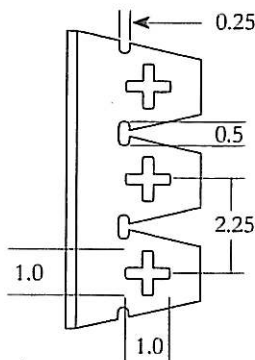
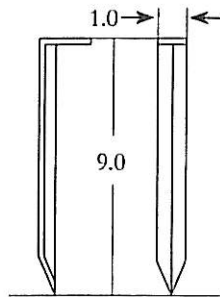
**Weight:** Shipped 6 lbs (approximate)

**Height:** Base x Height x Length  
2.5" x 1.75" x 15'

**Packaging:** 10 - 15 Foot Strips (60 lbs per bundle)  
8 - 9 Inch Steel Stakes per Strip (included)

**Installation Instructions****Edging Profile**

(Top View)

**Stake Profile****Edging:**

Install bricks or pavers. Lay edging sidewall with snug against the bricks or pavers. Once in place against the bricks and paver secure them down with stakes.

**Stake:**

Sink stake through the holes provided on the bottom fin every 2 feet at a 45 degree angle on the side opposite of the bricks or pavers (as it is illustrated in the installation detail). Sink stake through the bottom fin until the top of stake is flush with the bottom fin. Additional stakes are needed for tight curves and at the ends of the edging. Note: Do not install stakes on the same side or underneath bricks or pavers.

**Guarantee:**

When installed according to our instructions, Valley View Industries provides a twenty year guarantee against cracking, fading, or decomposing.

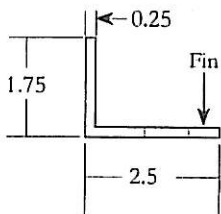
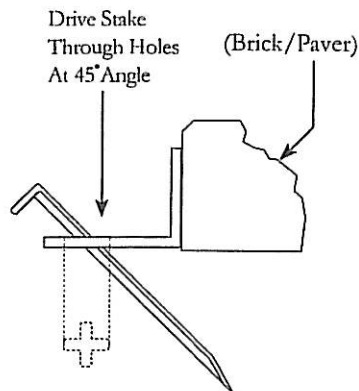
**Accessories:**

4 Pack Anchoring Stakes - Bulk (AS4-B)  
Bulk Anchoring Stakes (BAS)  
Diamond-Lok Stakes - Bulk (DLS8-B)

**Toll Free Distribution Network:** 1-800-323-9369

□ □ □ **Fax:** 1-800-323-3262

(Front View)

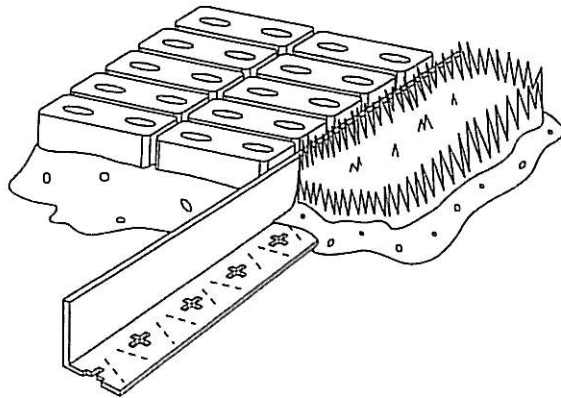
**Installation Detail****Accessories:**

**Valley View**  
Industries

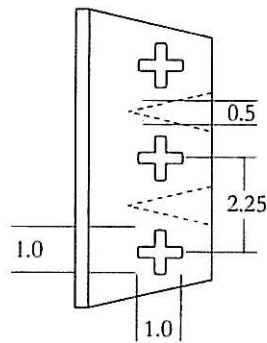
13834 S. Kostner Ave.  
Crestwood, IL. 60445  
www.valleyviewind.com  
valleyviewind@valleyviewind.com

Phone: 708-597-0885  
Toll Free: 800-323-9369  
Fax: 708-597-9959  
Toll Free Fax: 800-323-3262

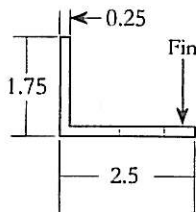
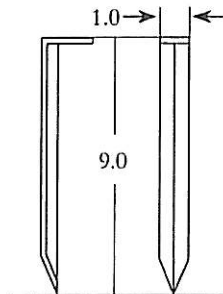
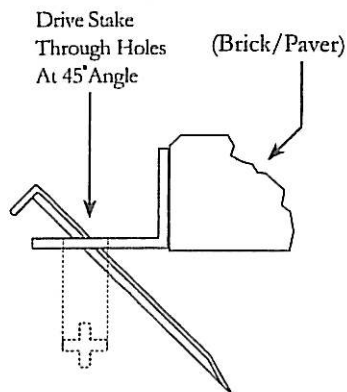


**Diamond-Lok<sup>®</sup> ("L" Shape) Rigid 15 Foot (DLLR-15)***Brick/Paver Edging***Product Diagram & Installation Details****Product Specifications****Material:** Medium density polyethylene with UV inhibitor**Weight:** 7 lbs (approximate)**Height:** Base x Height x Length  
2.5" x 1.75" x 15'**Packaging:** 10 - 15 Foot Strips (70 lbs per bundle)  
8 - 9 Inch Steel Stakes per Strip (included)**Installation Instructions****Edging Profile**

(Top View)



(Front View)

**Accessories:****Stake Profile****Installation Detail****Edging:** Install bricks or pavers. Lay edging sidewall with snug against the bricks or pavers. Once in place against the bricks and paver, secure them down with stakes.**Stake:** Sink stake through the holes provided on the bottom fin every 2 feet at a 45 degree angle on the side opposite of the bricks or pavers (as illustrated in the installation detail). If needed, you can cut along the perforated "V" slots on the fin to make tighter corners possible. Sink stake through the bottom fin until the top of stake is flush with the bottom fin. Additional stakes are needed for tight curves and at the ends of the edging. Note: Do not install stakes on the same side or beneath bricks or pavers.**Guarantee:** When installed according to our instructions, Valley View Industries provides a twenty year guarantee against cracking, fading, or decomposing.**Accessories:** 4 Pack Anchoring Stakes - Bulk (AS4-B)  
Bulk Anchoring Stakes (BAS)  
Diamond-Lok Stakes - Bulk (DLS8-B)**Toll Free Distribution Network:** 1-800-323-9369□ □ □ **Fax:** 1-800-323-3262

# **Exhibit M**



The Industry's Best

Home | About us | Products | Installation &amp; Tips | Event Calendar | Distributors | Contact Us

Search Find page with ☒ all or ☐ any of these words.

**You Gotta Keep em'  
Separated!**

## Bulldog-Edg™

Choose a Product



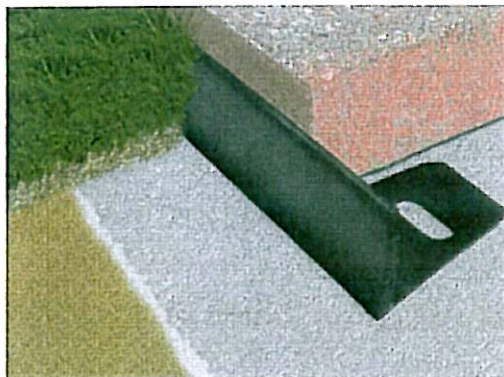
For a 1 inch version of  
the same restraint,  
check out **STONE-EDG**

- The strongest paver restraint in Oly-Ola's line, Bulldog-Edg features a thicker PVC construction that makes it ideal for extra heavy-duty paver projects such as driveways and patios. Bulldog's one-piece design flexes without snapping or cutting to make tight curves. Its simple, yet effective, design makes it the perfect choice for serious professionals.

- And, as with all Oly-Ola products, Bulldog-Edg is made with high grade PVC with no fillers or blown in material. It can be install under or outside the paver.

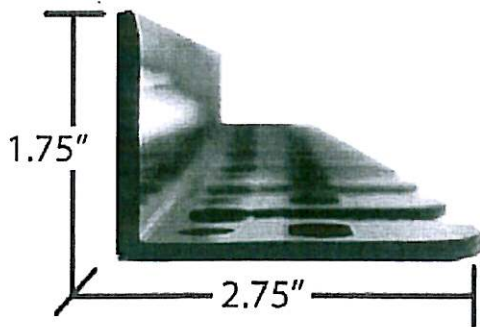
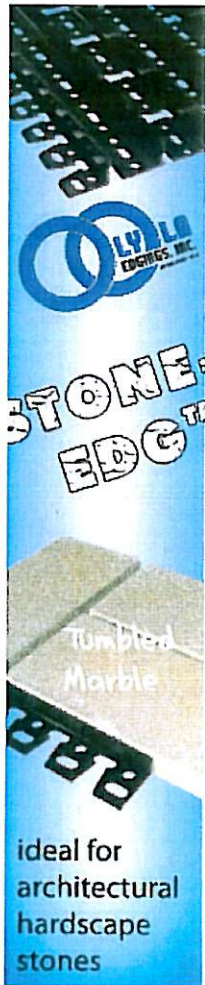
### FLEXIBLE PIECES - Available in 7.5 ft. lengths or 15 ft. lengths

Packaging	6 - 15 ft pieces per bdl or 12 - 7.5 ft pieces per box/bdl (90 ft)
Each Piece Includes	Edging only - Steel stakes and H-clip sold separate at discount
Material	Black Rigid PVC and carbon black concentrate
Average Wall Thickness	Vertical: .175 - .185 of an inch Horizontal: .145 - .155 of an inch
Dimensions Per Piece	Depth: 1.75" Vertical leg Width: 2.75" Horizontal leg
Weight	15 foot bundle: 34 lbs. 7.5 foot bundle: 34 lbs. 7.5 foot box: 39 lbs. (incl.stakes)



Install under paver    Install outside paver





**"The Best of the Best"**

- ✓ Seriously Tough
- ✓ Extremely Flexible
- ✓ Easily Installed
- ✓ Necessarily Safe

**Landscape Architects:** Please use 800-334-4647 on all specifications.  
This will allow us to help the contractor bid the job properly.

**For pricing information call or email us**

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E-mail: [edgings@olyola.com](mailto:edgings@olyola.com)

[Privacy Policy](#)



# **Exhibit N**

## PaveMaster®

PaveMaster® is warranted to be free from defects in material and manufacturing. It will not be affected by water, mildew, insects, or separation. As with any exterior product expect some fading. We do not cover labor or consequential damages. We credit the retailer where you purchased the product, so save your proof of purchase.



# PaveMaster® Landscape Edging

## PaveMaster® Benefits

Increase the value of your home with a paved surface! Do-it-yourself with easy to install **PaveMaster®** edging. Use for walkways, driveways, or patios being prepared with pavers, bricks, or stones.

**PaveMaster®** is made of heavy gauge HDPE recycled plastic for years of solid holding power. Available in 6' (1.8 m), 8' (2.4 m), and 15' (4.6 m) sections, this durable plastic edging will never rot or rust.

The unique design allows for installation in straight or curved areas with three options for anchoring - plastic stakes, steel stakes, or steel spikes.

No wonder homeowners, builders, and contractors choose **PaveMaster®**. Simply put, it is the top quality pavement edging.

*Start Paving Your Own  
Yellow Brick Road!*



An 8-Step installation guide, including a checklist of recommended materials, is mapped out on the following pages. Because each pavement project is different, be sure to check with your paver supplier and local building codes to determine the necessary materials and guidelines.



**ABS Plastic Stakes**  
12109, 12109,  
12120, 43130



**Steel Stakes**  
43303, 43230



**Steel Spikes**



**"Don't  
forget  
your  
Stakes!"**



**Master Mark Plastics**  
One Master Mark Drive  
Albany, MN 56307-0662  
800-535-4838  
[www.MasterMark.com](http://www.MasterMark.com)

Tour our facilities!  
Builders, contractors, dealers, or distributors  
call us for plant tours at our Albany and  
Paynesville, MN locations.

Copyright ©2005 Master Mark Plastics - P418001 SupP



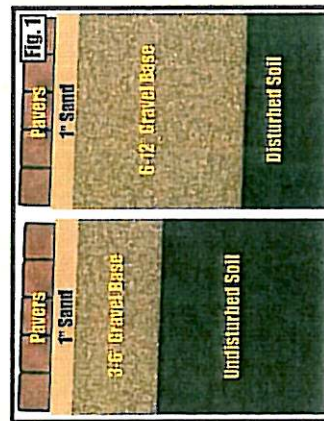
# PaveMaster®

## 8-Step Installation Guide

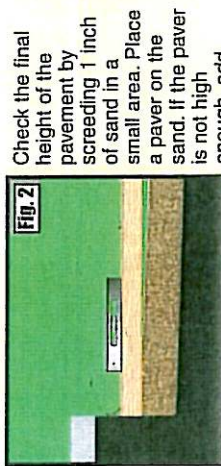
**3. Layer Gravel Base:** Preparation of the base is very important and could determine how long your pavement will last. If your base is uneven, your pavement will be uneven too.

A depth of 3 to 6 inches of gravel base is advised for installation in hard, stable soil that has remained undisturbed by digging or backfilling for at least 3 years. If the soil has been disturbed or the conditions cannot be determined, use 6 to 12 inches of gravel base. (See Fig.1)

Base material consists of coarse gravel, no larger than 3/4", mixed with concrete sand (fine-grained sand, not cement). Spread 2 inches of the gravel base across the excavated area. Rake evenly, then pack down with the plate compactor. Start at the outer edges and work toward the center. Add another 2 inches and repeat until the desired height is reached. Never pack more than 2 inches at a time. Keep the gravel base moist, but not soggy, to help the material compact better.

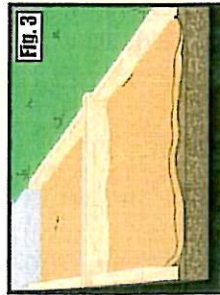


**4. Check Slope:** While layering the gravel base, maintain a proper slope to guide water away from buildings! Place a 2 x 4 and level perpendicular to the house. Measure from the top of the gravel base to the bottom of the 2 x 4. Create a slope of 1 to 2 inches per 10 feet. (See Fig.2)



Check the final height of the pavement by screeding 1 inch of sand in a small area. Place a paver on the sand. If the paver is not high enough, add more gravel base, not sand. If the paver is too high, remove some of the gravel base.

**5. Layer Sand:** Spread exactly 1 inch of concrete sand (not cement) on top of the gravel base. To screed, use two 2 x 4's as guides and the last 2 x 4 to level the sand evenly. Remember, if your base is uneven, your pavement will be uneven too. Do not walk on the leveled sand. (See Fig.3)



**6. Lay Pavers:** Start laying pavers in the corner nearest your supply, preferably by a fixture such as your house. When putting your pavers into place, do not exceed a 1/8" gap between them.

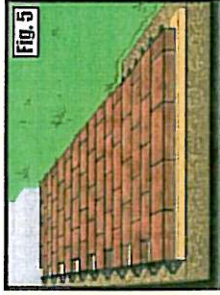
**Note:** Some pavers are manufactured with spacer bars to ensure proper spacing. Lay pavers from right to left, left to right, one row at a time, and so on. Set pavers lightly on the sand. Do not push down, twist, or slide the pavers. Walk only on the installed pavers and not on the sand. (See Fig.4)

Some pavers will have to be cut into shape with a masonry saw. Please follow all manufacturer's guidelines and safety precautions when using this potentially dangerous equipment!

**7. Install Edging:** Once all the pavers have been laid, install

**Fig. 4** PaveMaster® edging. Remove the concrete sand along the outside of the pavers. Place the edging on top of the exposed gravel base against the pavers. Tap edging with a rubber mallet until it is firmly against the pavers. Alternate between removing concrete sand and installing PaveMaster®. (See Fig.5)

Use Master Mark Plastics stakes (see materials), to anchor PaveMaster® every 2 feet for straight sections. Make sure edging is secure and rests firmly against the pavers. For curved installation, bend and contour the edging so it assumes the shape of your design. Anchor PaveMaster® every 1 foot for curved areas.



**8. Finish:** Sweep off excess sand. Make a few more passes over your pavers with the plate compactor. Sweep additional concrete sand (not cement) into any gaps to create a dry mortar. Keep making passes over the pavers and sweeping sand into the gaps until all gaps are full.

Sweep off all excess sand. Backfill with dirt and sod so that the anchors are covered and the lawn is flush against the wall of pavement. You have now finished your project! So take a walk down your proud-to-do-it-yourself yellow brick road!

### Materials:

- Pavers
- Master Mark PaveMaster®
- Master Mark Stake #1's: 12103, 12109, 12120, 43130, 43303, or 43230
- Concrete Sand (not cement)

### Equipment:

- Three 2' x 4' x 10' boards
- Level
- Tape Measure
- Wheelbarrow
- Gloves & Eye Protection
- Flat Shovel
- Rake (hard toothed)
- Broom (stiff bristled)
- Rubber Mallet

### Rentals:

- Masonry Saw
- Plate Compactor (3hp-5hp)
- Sod Kicker (if removing sod)

**1. Plan:** Plan for the area you wish to pave by bringing measurements to your paver supplier. This way, you get the right amount of pavers, gravel base, and concrete sand. Check with your supplier and with local building codes for any recommendations on your project.

**2. Dig: Important:** Before you dig, have an inspection done to locate any underground cables! Excavate 6 inches wider than the area you wish to pave. Generally, dig 3 to 6 inches deep for pedestrian weight or 6 to 12 inches deep for vehicle weight. Run a plate compactor over the excavated area at least twice, being sure to overlap passes by a few inches. Make passes at 45° angles from each other.

Before filling in the gravel base, check with your paver supplier for recommendations on using landscape fabric. Landscape fabric aids in water drainage, helps distribute paver weight, and reduces shifting or sinking.

# Exhibit O





Spikedge™ is an innovative all-in-one edge restraint system that has the spikes connected right to the edge restraint, so that you have them where and when you need them. Made from the same super-strong material as the restraint itself, spikes have been conveniently attached to the edge restraint which easily snap off, giving you the right number of spikes for your installation. Spikedge™ reduces installation time and saves you money by eliminating the need for costly spikes.

**Dimensions:**

8'  
2.44 m

**Installation:**

Spikedge™ can be installed in straight or curved applications. Simply snap one or more "stabilizer tabs", to allow Spikedge™ to flex for either inside or outside curved applications. 1. Remove spikes from strip with a knife or snips. 2. Snap out the "stabilizer tabs" (between base pads) for curved applications. 3. Using a 2 - 3 lb mallet to install spikes: Normal Load: walkways and patios 12" to 18" apart (on average every 4th hole). Heavy Load: driveways 12" apart (every 3rd hole). 4. Angle spikes inward, slightly towards the pavers when hammering them in. Hold spike with one hand while pounding in with the other to avoid vibration. (NOTE: hit spike head flush with mallet to avoid damaging the spike).



**Warning:**

NOTE: Do not install plastic spikes in gravels containing stones larger than 3/4" in diameter. CAUTION: Plastic may become brittle in cold weather. Always wear proper eye protection when installing plastic or metal spikes. Minimum radius 4 ft.

**Note:**

For existing installations simply peel away the sod from the edges of the pavers, remove the soil, add gravel, straighten the edge pavers if required, and install Spikedge™. Spikedge™ is made using a sophisticated foam injection process that produces a highly durable, weather resistant material. Unlike metal spikes that rust, Spikedge™ will not rust or decompose and will stand up to severe freeze and thaw conditions.

**Important:**

Read complete instructions on container prior to application.

# **Exhibit P**



Alliance



**PAVING  
EDGE**



RIGID MODEL



FLEX MODEL



MALE-FEMALE



TWIST-LOCK

**X<sub>TRA</sub>**

**VERSATILE**

**X<sub>TRA</sub>**

**ROBUST SYSTEM**

**X<sub>TRA</sub>**

**SUPPORT STRENGTH**

GATOR EDGE FLEX CAN CONNECT TO GATOR EDGE RIGID

1 PIECE : 8 LINEAR FEET  
1 PACK : 24 PIECES : 192 LINEAR FEET  
1 PALLET : 28 PACKS : 5376 LINEAR FEET

**Alliance** DESIGNER PRODUCTS INC.  
WWW.ALLIANCEDP.COM

*A leader in Hardscape Innovation*

225 Bellcrose West, Laval, Quebec, Canada, H7L 6A1  
T450.624.1611 • F450.624.1622 • Toll free: 1.866.212.1611

# Exhibit Q



## Advantages & Benefits

- One piece system does it all; straight, curved, or even a complete radius, without waste
- Open design allows for grass growth along paver border creating a strong yet invisible edge
- Interlock and spike ends together, ensuring a secure connection with extra support
- Rugged injection moulded plastic ensures the strongest edge designed for commercial, vehicular and patio or walkway applications
- Easy to install before or after the pavers have been laid
- Snap Edge® requires no extra connectors for a permanent piece to piece connection
- Convenient and efficient packaging makes it easy to handle and transport



Snapedge Canada Ltd.  
1-800-720-SNAP(7627)

Visit our website for more information  
[www.snapedge.ca](http://www.snapedge.ca)



Made with Recycled Materials

Distributed by:

37741

PRINTED IN CANADA

# SNAP EDGE®

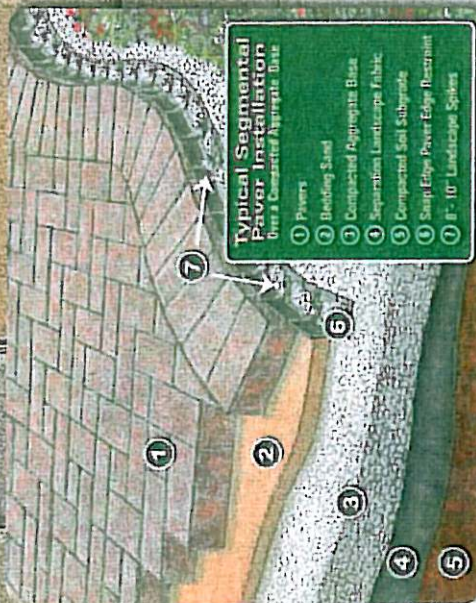
## Superior strength and simplicity...



## ....that's out of sight



## Typical Cross Section



## Before & After

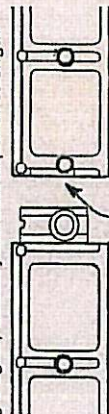


## Protect Your Investment

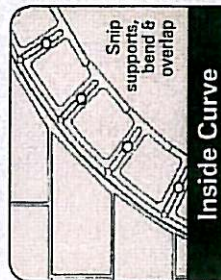


## Easy Installation

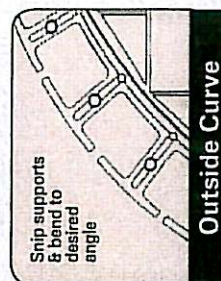
Ends interlock with ease & spike together for extra support, forming a tightly sealed joint with superior strength



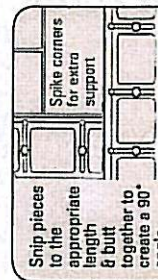
## Secure Interlocking Ends



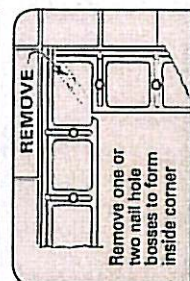
## Inside Curve



## Outside Curve



## Outside Corner



## Inside Corner

When it comes to unit pavers, Snap Edge<sup>®</sup> is the ultimate edging choice.

## LIFETIME WARRANTY

Snapedge Canada Ltd. is proud of the quality standards engineered and manufactured into our products. That's why Snap Edge<sup>®</sup> is guaranteed for a lifetime of use.

This lifetime warranty applies to a lifetime of use by the original purchaser beginning on the date of purchase. It covers all defects in components and manufacturing workmanship. Deterioration of product due to abuse, loss, or usage in any manner not consistent with its original intent voids the warranty.

For more information visit our website [www.snapedge.ca](http://www.snapedge.ca)



# **Exhibit R**

restraint

Dimex Corporation: Paver Restraint

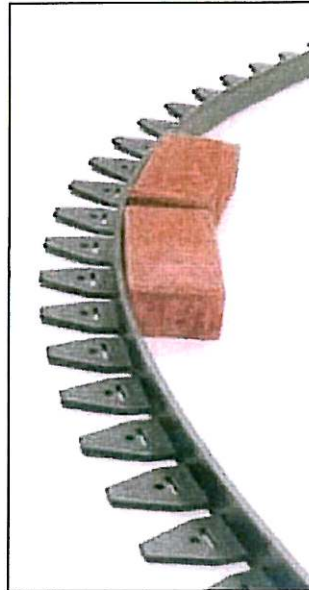
## EdgePro®

*The Professionals' Choice!*

Heavy-duty PVC edging for interlocking concrete or brick pavers.

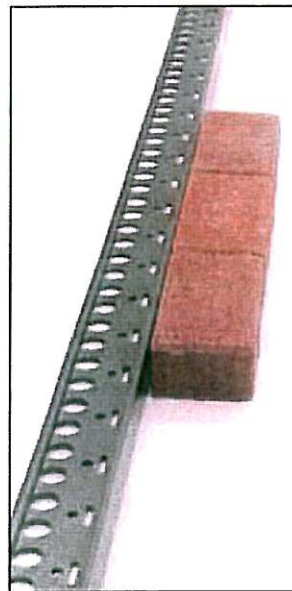
### EdgePro® Paver Restraint

- Extra rugged design withstands heavy traffic. **EdgePro®** can be used for either walkway, patio or driveway installations.
- Durable **EdgePro®** PVC will not crack, rot or deteriorate. Designed for both straight and radius installations without snipping or cutting.
- L-shape design eliminates turf "brownout" by allowing maximum backfill against the pavers.
- Compact 7 1/2 foot design is convenient and efficient, allowing easy storage and hauling.
- **EdgePro®** Paver Restraint can be anchored with standard 3/8 X 12 inch or 9 inch landscape stakes.



### EdgePro® Rigid Restraint

- Extra Rigid for big jobs with straight installations.
- Durable **EdgePro®** PVC will not crack, rot or deteriorate.
- Compact 7 1/2 foot design is convenient and efficient, allowing easy storage and hauling.



### Specifications

	<i>EdgePro® Paver Restraint</i>	<i>EdgePro® Rigid Restraint</i>
Material	Engineered Rigid PVC Alloy	Engineered Rigid PVC Alloy
Dimensions		
Length	7 1/2 feet	7 1/2 feet
Vertical Section	1 7/8 inches	1 7/8 inches
Horizontal Section	3 1/2 inches	3 1/2 inches



restraint

#### Minimum Wall Thickness

Vertical Section	0.125 inches	0.125 inches
Horizontal Section	0.220 inches	0.125 inches
Minimum Rib Thickness	---	0.280 inches

#### Material Tests

	ASTM Test Method	Minimum
Tensile Strength	D-638	5,000 PSI
Flexural Modules	D-790	280,000 PSI
Impact Strength	D-256	120 in lbs/inch

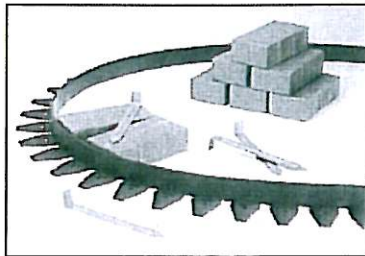
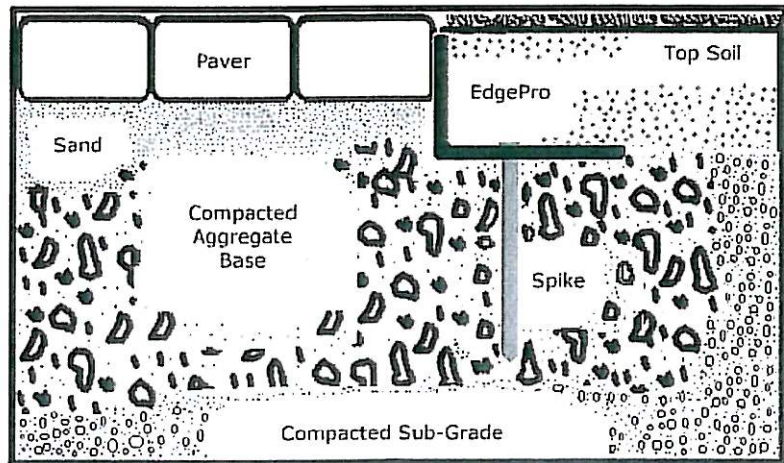
EdgePro® passes Ultraviolet and Weathering Tests per Federal Std 191 A, Method 5804.

#### Installation Guidelines

Install compacted gravel base. Consult your paving stone supplier for proper width and depth for the specific application.

After pavers have been set in place, install edging along outside row of pavers.

No snipping or cutting is necessary for easy installation of radius designs. Simply bend **EdgePro®** Paver Restraint into the desired radius.



Secure **EdgePro®** by driving standard 9 inch landscape stakes or 3/8 x 12 inch landscape spikes into compacted base.

Recommended spike placement:


- Flexible section, every 18 inches
- Rigid section, every 24 inches

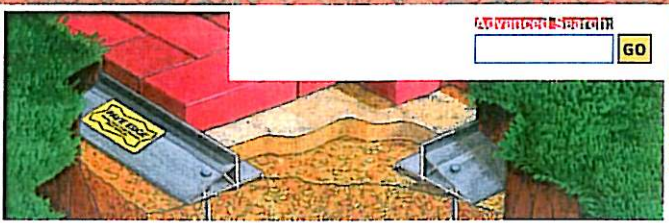
Backfill perimeter with topsoil, seed or sod as preferred.



# Exhibit S

[Home](#) | [PAVE EDGE](#) | [SANDLOCK](#) | [Tools and Equipment](#) | [Adhesives](#) | [Chemicals](#) | [Material Handling Equipment](#) | [New Products](#)





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- [PAVE EDGE](#) 3
- [Tools and Equipment](#) 5
- [Paver Brights](#) 2
- [PAVE CHEM](#) 3
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## PAVE EDGE

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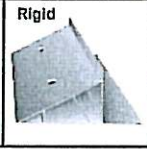


*The Japanese have a philosophy called "Zero Defect." This concept states that "It is always cheaper and more profitable to do the job right the first time." It is unbelievable how much money it costs to go back and repair a job. Man hours, mileage, equipment, loss of customer confidence, damaged reputation, and loss of revenue from not working on a paying job.*

PAVE EDGE offers unchallenged design flexibility, simple installation requirements, lightness in weight, superior strength and durability. Because it is the first edging designed exclusively for pavers, it is the most widely accepted and used paver edge restraint system in use today! Designed to match the durability of the pavers.

PAVE EDGE will maintain the perimeter interlock better than any other product. Designed to work well for sidewalks, patios and driveways.

### Products:

Click on a small image below to see larger PDF image!

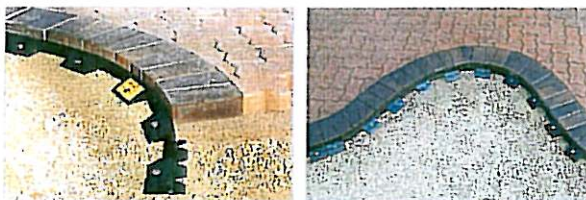
Flexible	Rigid	Connection	Industrial
			

#### RIGID - The original PAVE EDGE.



- Designed for straight areas, but flexible enough to support gradual curves. For smaller curves PAVE EDGE RIGID can be easily cut.
- If you run out of PAVE EDGE FLEXIBLE on the job, you can easily cut the back of our PAVE EDGE RIGID with a hacksaw to transform it into flexible edging.
- Designed to withstand loading forces equivalent to that of a heavily trafficked residential driveway and able to withstand occasional heavy truck loading.

#### FLEXIBLE:



- PAVE EDGE FLEXIBLE combines the durability and design of PAVE EDGE RIGID with flexibility to produce tighter and shorter curves.
- Easily connected to PAVE EDGE RIGID, the two combine to do every job possible!
- Designed to withstand loading forces equivalent to that of a heavily trafficked residential driveway and able to withstand occasional heavy truck loading.
- Do not use PAVE EDGE FLEXIBLE edging on straight areas, use only for radius areas.

#### INDUSTRIAL:



Translate this page in:



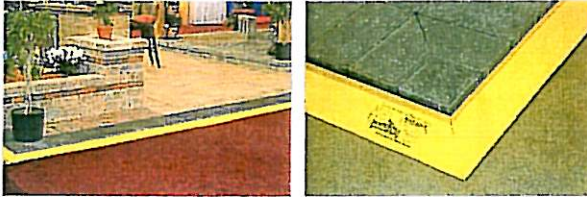


# PAVE EDGE - Interlocking Concrete & Brick Paver Edge Restraints & Installation by PAVE TECH



- Large, stronger design made especially for heavy vehicular, commercial, and industrial applications
- Only Paver Edge Restraint large enough for use with the thicker paver and bedding layer on a typical permeable application.
- Designed for the harsh environment of Commercial and Industrial Pavements.

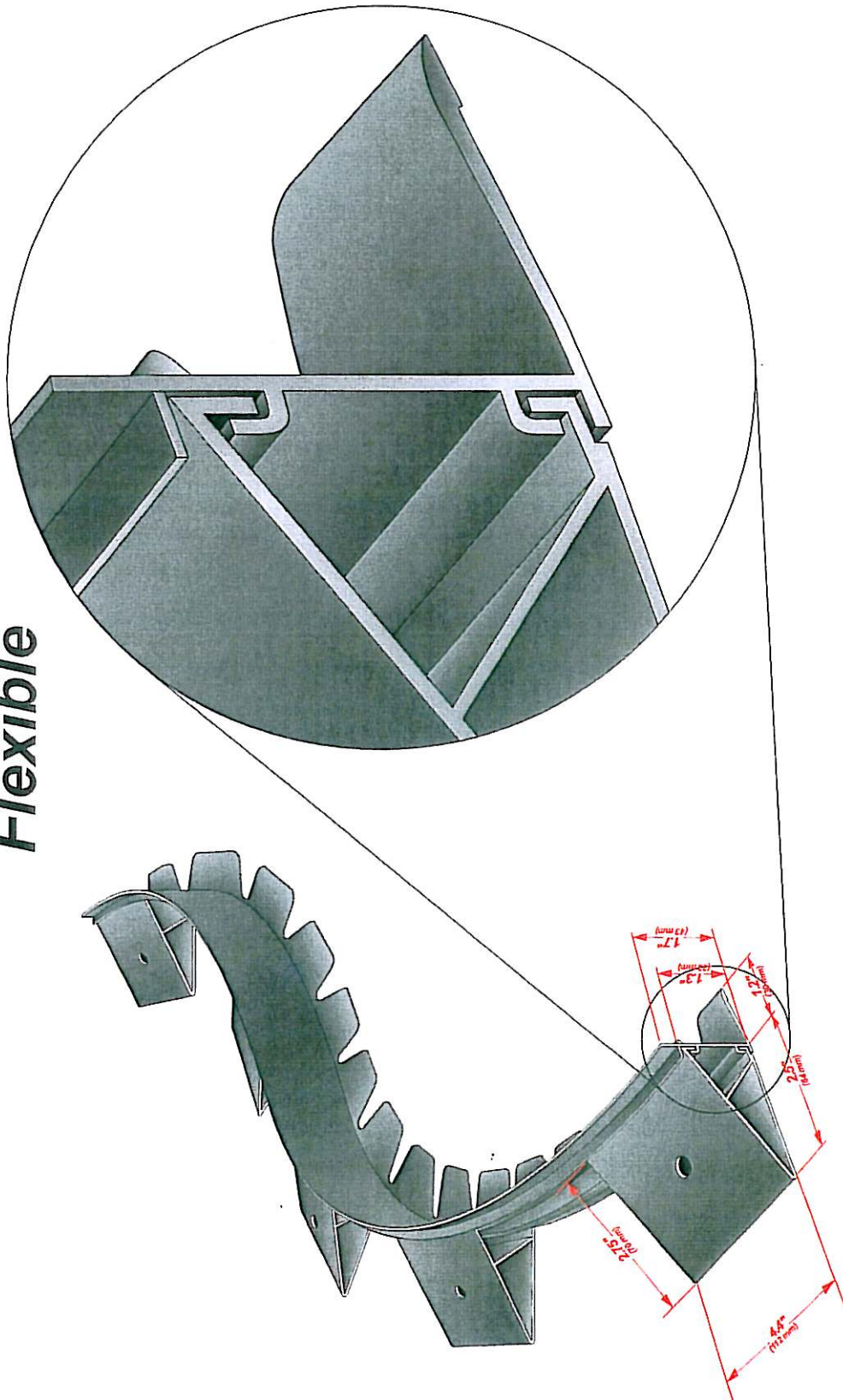
## HI-VIZ



- [View PDF - HI-Viz Brochure](#)
- [View PDF - HI-Viz Installation](#)

- Bright yellow PAVE EDGE Rigid
- Lipped design enables HI-VIZ to hold pavers and sand in place
- Reduces trip hazards
- Transitions nicely from an aisle to booth area
- Easy to install
- 6' lengths

**Flexible**



# Exhibit T



# ST PLASTICS Engineering Handbook

of the Society of the  
Plastics Industry, Inc.

Fifth Edition

Edited by

Michael L. Berins



CHAPMAN & HALL

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ned engineering resins, parts can be designed with wall sections as low as 0.125 inch. The design criteria of a structural foam part must be considered before the optimum wall thickness is selected.

**Draft Angles.** In injection molding, sufficient draft angles are necessary; but because of the lower pressures involved in foam molding, smaller draft angles can be tolerated. Generally, an angle of 0.5 to 3° will provide sufficient draft to release the part.

Textured surfaces on sidewalls generally require an additional 1° draft per 0.001 inch depth of texture. For best results, one should consult the engraver before specifying the draft requirements.

**Fillets and Radii.** Sharp corners create points of stress concentration and restrict material flow. They are often a cause of part failure. One should use as large a radius as possible on inside and outside corners to minimize this stress concentration and to aid in mold filling. In most parts, the minimum inside radius should be 0.060 inch. If the section is under load or subject to impact, a minimum radius of 0.125 inch should be used.

A radius equal to 0.6 times the wall thickness will provide a desirable fillet for most situations.

**Bosses.** Bosses can be easily incorporated into structural foam parts to accept fasteners and support components. In many applications, the addition of molded-in bosses, mounting pads, standoffs, and retainers can replace costly brackets and miscellaneous small metal part assemblies. In general, boss diameters should be two times that of the cored hole. This recommendation will vary, depending on the resin used and the boss wall thickness.

Bosses should be cored to prevent the formation of a thick section in the part. Generous fillet radii should be used at the base of the boss to avoid stress concentration and resist torque loading.

**Transition Sections.** Transition sections from thick to thin walls are more easily

be tapered for proper processing. In molding parts with wall sections of varying thicknesses, it often is desirable to gate the part in the thin section and allow the material to flow into the thicker area.

**Hinges.** Properly designed, integral structural foam hinges offer a fastening technique while eliminating costly bracketry and assembly time. Hinges can be designed to be either hidden or visible, depending on their location.

**Snap-fits.** The superior rigidity and strength of structural foam permits increased utilization of snap-fits for assembly and for mounting heavy components in bases. A quick and extremely economical assembly method, snap-fitting eliminates the need for added screws, brackets, and fasteners, significantly reducing labor.

## Mechanical Properties

**Tensile Strength.** The apparent tensile strength of any foam material is less than that of the same material in a solid configuration. The strength is reduced considerably because of the density reduction and stress concentrations caused by each individual cell. Therefore, tensile stresses should not exceed the proportional limit of the material.

**Compressive Strength.** The compressive strength of a foam material is higher than its tensile strength. In bending, a compressive failure—although extremely rare—normally involves buckling of the skin and collapse of the cellular core.

**Stiffness-to-Weight.** The high stiffness-to-weight ratio of structural foam is the primary advantage of this material has over metal and standard (nonfoamed) injection-molded plastics. An equivalent weight of 0.250 inch foam can have over seven times the rigidity of steel and thirteen times the rigidity of zinc. Compared to an equivalent weight of solid plastic, 0.250 inch foam can have twice the rigidity.

**Flexural Properties.** Structural foam's distribution of material at any cross section mal